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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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7590 04/15/2009				
Mark Krietzman Suite 400 E 2450 Colorado Ave. Santa Monica, CA 90404			EXAMINER CHEN, BRET P	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 04/15/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/712,208

Applicant(s)

CHELLAPPA ET AL.

Examiner

Bret Chen

Art Unit

1792

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-18 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-18, 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claims 1-9, 11-18, 21-25 are pending in this application.

The amendment dated 1/14/09 has been entered and carefully considered. While the 131 Declaration submitted previously is not in proper format, the rejection over Brophy has been vacated in view of the rejection below. The examiner regrets the inconvenience.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9, 11-18, 21-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, from which claims 2-9, 12-18, 21-22, depend, the phrase “mixed with metal” is deemed vague and confusing as to what it is referring to. It is noted that the claim as presently written requires cold spraying: a) alkaline oxide or b) oxides doped with alkali or alkaline earth metals. It is not clear what the metal is mixing with.

In claims 13-14, the claims are confusing as they are dependent on a canceled claim. The examiner will treat them as being dependent on independent claim 1. Regardless, the term “said mesochannels” lacks antecedent basis as there is no mention of mesochannels anywhere in the claims.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 21, 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (Applied Catalysis article) in view of DE 19900477.

Chang discloses a method of resisting coke in catalysts by the addition of alkaline promoters such as K and Ca oxides (abstract). Specifically, Chang teaches that in the reformation reaction to produce hydrogen (p.112 lines 1-9), coking is a problem as they deactivate the catalyst and plug the reactors and that it is desirable to develop a catalyst which has superior coke resistance (p.112 lines 18-29). In one embodiment, nitrate salts were heated and decomposed to form the oxides on the support (p.113 lines 5-17). However, the reference fails to teach cold spraying.

DE'477 teaches a method of using a gas nozzle to cold spray an oxide coating (col.3 lines 19-67). One of the advantages of cold spraying is reduced thermal budget. It would have been obvious to utilize cold spraying of DE'477 in the process of Chang with the expectation of reducing the high temperatures required in the coating process.

Regarding claim 2, Chang teaches zeolite (last full paragraph of p.112).

Regarding claim 3, Chang teaches of varying the ratios on p.113. It would have been obvious to one having ordinary skill in the art to have determined the optimum values of the relevant process parameters such as ratios as taught by Chang through routine experimentation in the absence of a showing of criticality.

Regarding claim 21, Chang teaches a tube (p.113 second full paragraph).

In independent claim 23, the applicant requires cold spraying a mixture of metal and alkaline oxide doped with alkaline earth metal. Chang teaches zeolite supported Ni and KNiCa catalysts (p.113 first full paragraph).

In independent claim 24, the applicant further requires reducing carbon formation. Since the appropriate cold spraying step is taught by the combination of Chang/DE'477, the reduction of carbon formation would be inherent to that process.

In independent claim 25, the applicant requires spraying the gas-fill mixture. The combination of Chang/DE'477 teach cold spraying as noted above.

Claims 4-9, 11-18, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (Applied Catalysis article) in view of DE 19900477 and further in view of Sanger et al. (6,190,623).

The combination of Chang/DE'477 discloses a method of resisting coke in catalysts by cold spraying alkaline promoters such as K and Ca oxides as noted above. However, the reference fails to teach a specific reactor material.

Sanger teaches the use of stainless steel in a hydrogen generation system (abstract and col.1 lines 6-10) for the use at high temperatures (col.9 lines 20-48). It would have been obvious to utilize stainless steel of Sanger in the process of Chang/DE'477 with the expectation of being conducive at higher temperatures.

Regarding claim 5, Sanger teaches the use of a tube (col.9 lines 1-19).

Regarding claims 6-9, 11, 15-18, 22, the applicant requires coating the tube. It is noted that Chang specifically teaches of coating to prevent coking by coating anything that can

deactivate the catalyst and plug the reactors. One skilled in the art would reasonably expect that the same benefit can be applied to the tube as well and hence, would have been obvious to coat with the expectation of reducing coking. The same issue would apply to a cover in claim 11, reactor portions in claims 15-16, tubings in claims 17-18 and covers in claim 22.

Regarding claim 12, Sanger teaches the use of a hydrogen-separating membrane (col.4 lines 18-30).

Regarding claims 13-14, the applicant requires mesochannels of specific size. It is noted that Chang specifically teaches of coating to prevent coking by coating anything that can deactivate the catalyst and plug the reactors. One skilled in the art would reasonably expect that the same benefit can be applied to the mesochannels as well and hence, would have been obvious to coat with the expectation of reducing coking. It would have been obvious to vary the size in the absence of a showing of criticality.

Response to Arguments

Applicant's arguments with respect to claims above have been considered but are moot in view of the new ground(s) of rejection.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bret Chen whose telephone number is (571)272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bret Chen/

Primary Examiner, Art Unit 1792

4/13/09